With Dr. Ogilvie Will's

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ON

FILIFORM BOUGIES;

THEIR USES AND ADVANTAGES.

BY

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> "I PITY THE PATIENT WHO HAS A SOLID INSTRUMENT THRUST INTO HIS BODY BY A KNOWING MAN AT ANATOMY."
>
> *Sir Henry Thompson.*

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ON FILIFORM BOUGIES.

WHEN speaking of the superiority of French flexible catheters to those known as English, Sir Henry Thompson remarks, "It is one of the many extraordinary instances of English conservatism that these instruments are found in so few hands."—("Diseases of the Urinary Organs.") This remark may, I think, be equally well applied to the comparatively slight use made of filiform bougies in this part of Great Britain at any rate.

Liston's dictum, that one should know the anatomy of the urethra thoroughly, and pass the instrument accordingly, is still paramount, and the preference for stiff to flexible bougies and catheters is therefore most manifest. Knowing this, and feeling how much needless trouble and anxiety those who hold this doctrine endure from a strict adherence to their faith, and how much uncalled-for suffering their patients must be called on to undergo, I desire to direct attention to the advantages accruing from the employment of filiform bougies in difficult cases of urethral stricture. The cases I purpose relating possess no features of interest for those who have already adopted the use of filiform instruments, but they seem to me to be striking examples of what may be readily accomplished by any one who puts them to the test of practice.

So little notice is taken of filiform instruments by authors of standard works on surgery, that—notwithstanding the powerful advocacy of leaders in surgery both in this country and abroad in works specially devoted to the consideration of surgical diseases of the genito-urinary organs, and in papers in the medical periodicals—it is not to be altogether wondered at that they have not yet found favour with the great body of medical practitioners. Most British authors of works on surgery either altogether ignore the existence of filiform instruments, or, if they do notice them at all, they are dismissed in a sentence or two. Fergusson, Pirrie, Bryant, Holmes, Miller, Druitt, and Fairlie Clark do not mention them, nor do they find a place in Holmes's System of Surgery; Gant mentions the existence of catgut bougies, while Erichsen speaks favourably of them; Spence alludes to the use of whalebone bougies in cases complicated by false passages; and the author of the article "Bougie" in Cooper's Surgical Dictionary devotes a short paragraph to Plenck's introduction of catgut instruments, but his statement, that catgut has been objected to, as it sometimes expands beyond the stricture, and gives great pain on being withdrawn, is not calculated to encourage a trial of filiform bougies by those who have no practical acquaintance with their use.

Though filiform instruments have received but scant notice in works on general surgery published in this country, still, attention has been frequently drawn to them in various medical journals, and they find a place in Sir H. Thompson's work on Stricture, and in the last edition of his "Lectures on Diseases of the Urinary Organs," he speaks well of very tiny flexible catheters, much smaller than No. 1 (English scale), containing slender steel threads in place of the usual stylet. In France and America filiform instruments are in constant use, and receive their due meed of praise from surgical authors.

Twenty-five years ago Leroy D'Etiolles published a work on the advantages of using twisted filiform bougies, and his example has been largely followed by his surgical brethern in that country; Ch. Phillips in his "Traite Des Maladies Des Voies Urinaires," published in 1860, strongly commends the use of filiform instruments, and dwells at considerable length on the advantages attending their employment, and he gives the details of some cases, among them examples of multiple and traumatic strictures, where he succeeded in passing whalebone filiform bougies after Nélaton, who ultimately sought M. Phillip's assistance, had failed; and from a note in the last number of the "Edinburgh Medical Journal," I see that Amussat, fils, has lately written a pamphlet on the subject now under consideration. The use of filiform instruments is warmly recommended by American surgeons—notably by Bumstead and Van Buren, whose works on venereal diseases, and diseases of the genito-urinary organs are replete with practical information concerning all the minutiæ of treatment proper for affections connected with the genito-urinary tract. In speaking of filiform bougies, Bumstead says, "If their value were better known, we should hear of fewer cases of 'impassable stricture'"; while Van Buren remarks, "filiform bougies, intelligently used, make impassable strictures the greatest rarities in a surgeon's practice". Were it necessary to substantiate the statements of those well-known and widely-experienced surgeons, my own experience would lead me to express an equally strong opinion, and I think that the cases I am about to narrate would prove, in a certain degree at least, that I would be justified in doing so.

Four varieties of filiform bougies are met with, viz., the catgut, the English, the French, and the whalebone. Of the two first I have no personal experience, but those who may desire information concerning catgut bougies will find a valuable paper, describing their mode of employment, by Professor Rawdon Macnamara, in the *Medical Press* for 29th September 1875, and notices of the English instruments—bougies and catheters—may be found in Van Buren's work, and in Sir H. Thompson's Lectures, already alluded to.

The French filiform bougies are made of the same material as the well-known French catheters; some of them have a central wire of lead or copper to allow of their being bent at different angles, while others have a slender piece of whalebone in place of the wire to give them firmness. For my own part, I prefer the simple French instruments without any addition, as, if it is desired to use a bougie bent to an angle, or if a stiffer instrument is required, whalebone will be found to fulfil both indications. Whalebone filiform bougies are thin, bristle-like strips of that material, and may be obtained with or without olive tips; they are extremely smooth, and non-irritating. By dipping them in hot water they are rendered pliable, and their points may be twisted into any form desired which they will retain on becoming cold.

French filiform instruments measure from one millimetre in circumference upwards, while whalebone bougies may be had of a still smaller size. Some are of the same thickness throughout, but most of them are made with the shafts thicker than the points, the tips measuring one millimetre, and gradually increasing to one, two, three or more millimetres, as the proximal extremity of the instrument is reached. Flexible catheters which, from their minute size, may almost be regarded as filiform, are also to be had. I have lately received a supply of these instruments from Krohne and Sesemann, which they tell me are the smallest catheters yet made; they measure rather more than three millimetres at their points, and four at their shafts, and contain strands of very delicate wire in place of the ordinary stylets. They are thus considerably smaller than No. 1 English.

The mode of using filiform instruments hardly requires any notice, as it does not vary in any very important particulars from that followed in the case of other flexible instruments. A little difficulty is sometimes experienced in passing a filiform bougie to the strictured point, as its fine point is apt to become engaged in enlarged follicles so often present in urethræ which have been the seats of inflammations. This difficulty may be easily overcome by first filling the canal with oil, as was done in Case 1, where the points of entanglement were numerous, and not easily avoided.

It may be observed that I used carbolic oil, a practice I now invariably follow when lubricating any urethral instrument, as my friend Mr Chiene has proved to my complete satisfaction, that the danger of introducing germs into the bladder is not to be lightly regarded. When the bougie is fairly within the stricture, its further progress may be suddenly arrested by muscular spasm, and it may be so tightly grasped that it may be momentarily impossible either to pass it into the bladder, or to withdraw it. When working with so slender and flexible an instrument, the use of force would be manifestly out of place, as the result would inevitably be fracture of the bougie, or bending it in such a way, as would utterly defeat the object in view, therefore the best rule to follow in such circumstances is to leave the bougie in position for a few minutes until the spasm ceases, when little difficulty will be found in guiding it into the viscus.

In some cases, however, after the stricture is traversed by the bougie it may still be arrested before the bladder is reached from its point becoming entangled in the meshes of the reticulated mucous membrane lying behind the contraction; if this happens the bougie should be slightly withdrawn, and a fresh attempt to lodge it should then be made, the instrument being advanced in a rotatory manner the twisting movement rendering the probability of entanglement much less than if it be simply pushed straight onwards. Filiform bougies with angular points are chiefly useful in assisting one in finding the orifice of a stricture when it is placed to one side instead of being in the mesial line; when the strictured point is reached the bougie should be gently twisted from side to side until the point engages itself in the opening, when it may be pushed through the strictured portion of the canal into the bladder. Whalebone bougies with twisted or corkscrew points are useful in traversing long and tortuous strictures. The slender catheters just mentioned are warmly recommended by Sir H. Thompson, on account of their ability to transmit urine, and thus to assure the operator that the instrument has really teached the bladder

When penetration of a tight stricture has been effected, and the filiform instrument lodged in the bladder, it may be utilized in various ways, on which I shall not enter at any length, but content myself with enumerating them.

1. Filiform instruments may be obtained with little female screw-caps fitted on to their proximal extremities, which can be attached to flexible catheters fitted with male screws at their points. Mr. Teevan's instrument, so constructed, is a valuable one, and may be used with good effect when stricture is complicated with urgent retention of urine; the catheter, after attachment, being guided into the bladder by the bougie, which curls up in the viscus. After the bladder is completely emptied, the catheter portion of the apparatus should be withdrawn, and detached from the bougie, the latter being left in the urethra

for the purposes of continuous dilatation, or to allow of the re-attachment of the catheter should it be again required. American surgeons sometimes use fine silver instruments screwed on to filiform bougies in the same manner; and of an instrument, of which he gives a woodcut, and which is very similar to that sold in this country as Teevan's, Phillips says, "Cet appareil, d'une grande simplicité, m'a été très utile".—(*Loc. cit.*, p. 441.)

2. Whalebone filiform instruments may be used as guides over which a catheter, either silver or flexible, open at its point, may be passed through the stricture; or a tunnelled catheter, *i.e.*, a catheter with a little bridge of metal on its convexity and close to its point may be threaded over a filiform instrument, and thus be conducted to the bladder.

These latter methods, though occasionally useful, will not probably receive general adoption, as they necessitate the use of much longer filiform instruments than are generally employed. Van Buren and others hold that the guide should be two feet long so as to allow of gradual retraction while the catheter is being passed onwards towards the bladder, least the whalebone should get doubled up and broken in the canal. These long and somewhat unwieldy strips of whalebone are much more difficult of management than the ordinary-sized filiform instruments.

3. Filiform instruments may be attached, as already described, to instruments used for divulsion, or internal urethrotomy, or to the staff used in Syme's operation.

4. They may be used as guides in external perineal urethrotomy, the mode of operation originally suggested by Van Buren, and perfected by Gouley, being followed, or the modification described by Teevan being adopted.—(*British Medical Journal*, 1876, vol. ii., p. 422.)

5. If the crisis of retention of urine is not very urgent, a filiform bougie, *per se*, may be left in, as it will, in a very short space of time, act as a guide to the urine, which will pass by its sides, and the patient will soon be enabled to empty his bladder in this way, without the aid of a catheter. Phillips employs a somewhat similar mode of treatment in cases of retention, he introduces a whalebone filiform instrument, leaves

it in for a few minutes, then withdraws it partially, the withdrawal being followed by a squirt of urine, and he goes on repeating this manœuvre until the contents of the bladder are sufficiently evacuated to relieve the agonies of the patient, or until the urine begins to flow by the side of the bougie, and of this he says, "Cette manière d'attaquer la rétention d'urine est longue, peu brillante et peu chirurgicale, selon le sens attribué a ce mot; mais elle est sûre, exempte de danger, et elle donne un résultat assez complet, puisque, en peu de temps, elle fait cesser les douleurs, quoiqu'on n'ait pas évacué la totalité de l'urine".—(*Loc. cit.*, p. 437.) That micturition is readily accomplished during the residence of a filiform instrument within a stricture may be seen from the following cases, and observations to the same effect are set forth in a paper by Mr. Furneaux Jordan in the *Lancet* for 29th January, 1876. In Case 2, mentioned below, the patient had a better stream soon after the tying-in of the bougie than he had had for many years. Another advantageous mode of employing filiform instruments does not come under any of the foregoing heads, viz., their usefulness in cases of stricture complicated by false passages. In cases of this kind, filiform bougies may be used to fill the false passages, first one instrument being passed in and left in position, then another, and so on. After all the openings are filled with bougies, each one should be tried in turn until that one lying in the mouth of the stricture is found, which will be at once known by its being grasped, the other instruments are then withdrawn, and the remaining bougie pushed into the bladder.

Such, then, are the main uses of filiform bougies, and from what has been pointed out, I think that it must be ceded that they are at least worthy of more notice than they have yet received at the hands of British surgical authors; and it does not seem to me to demand a great amount of comprehension to understand that a minute flexible instrument will worm its way through a stricture with greater ease to the surgeon, *and far less risk to the patient*, than an inflexible metallic probe, be its point never so fine. In the case of a master such as Liston was, surgical miracles may perhaps be accomplished; but this cannot be expected of those to whom the treatment of stricture is somewhat a rarity, and on them I would strongly urge a trial of filiform instruments, feeling assured that they will speedily become converts to the doctrine that flexible instruments are to be infinitely preferred to metallic, and that impassable stricture is more a thing of the past than of the present. Thus they will be enabled to endorse Mr. Syme's statement "that if the urine passes out, instruments may always, through care and perseverance, be got beyond the contraction".—(*Edinburgh Monthly Journal*, June, 1851.)

The cases which I append only illustrate the simple use of the bougie: they followed one another in rapid succession, treatment being first commenced in two of them within a few days of each other—a circumstance I mention, as it shows that cases demanding the use of very small instruments are not very rare; and they were all cases where even "patience, perseverance, and sweet-oil"—the triumvirate required according to an old surgeon mentioned by Professor Spence—would probably have failed in attaining the desired end, had the instruments not been filiform, or the surgeon much more experienced than myself.

Case I. G. M., æt. 54, was admitted into Jacob's ward on 7th December, 1876, suffering from symptoms of stricture of the urethra. He stated that he had suffered from two attacks of gonorrhœa many years ago, but he was unable to supply any very trustworthy particulars regarding the first appearance of changes in his stream, etc.; it is now distinctly forked, and his calls to make urine are incessant, both during the day and night, and a few drops of water trickle away after the completion of the act. As he is unable to urinate when any one is looking on, his statements could not be verified. On instrumental exploration a stricture was detected in the bulbous region. An attempt to penetrate the strictured portion of the canal was made, first with French flexible olive-tipped instruments, and next with a Thompson's probe-pointed silver catheter, but none of them could be got to enter it. The stricture was evidently an exceedingly irritable one, for the use of the flexible instruments was followed by slight bleeding, and gave rise to considerable pain.

Some days subsequently another attempt was made with various instruments, including Dr. Heron Watson's probe-pointed steel catheter, with which I have often succeeded after I have failed with other stiff instruments; but it was again unsuccessful, for I found it impossible to get the point of the instrument within the stricture, the least sensation of grasping never being elicited. Immediately after this trial the case went under the care of my colleague, Dr. Garden, as I was prevented by illness from attending to hospital work; and during the next few weeks he made several careful and protracted attempts to reach the bladder, but failed.

On 5th January, after trying the instruments I had before used, and French filiform bougies varying in size from No. 5 to No. 2, and again not succeeding in effecting penetration, though the point of No. 2 was evidently grasped by the stricture, but would not pass through it, I filled the urethra with carbolic oil by means of an ordinary male syringe, and while retaining the oil within the canal by making pressure at the meatus, I succeeded in passing a whalebone filiform bougie, measuring about half a millimetre in circumference, into the bladder with the greatest ease. (I may here mention that I had before tried to pass a fine instrument while the canal was distended with oil, but in vain.) The bougie was allowed to remain *in situ*, but on account of its extreme fineness it seemed useless to attempt to tie it in. The patient was enjoined to keep quiet, and to prevent the instrument from being washed-out during micturition. He did so for some hours, during which he passed water easily; but during an incautious moment in bed, the bougie slipped out four or five hours afterwards. Next day a French filiform bougie, measuring No. 3 on the scale-plate, was readily passed and tied in; it was allowed to remain for twenty-four hours, when it was replaced by a No. 1 English catheter. On withdrawing this instrument forty-eight hours after, a succession of French bougies up to No. 16 was passed.

Four days after, No. 19 was reached, then No. 21; and at the end of three weeks from the date when penetration was first effected, No. 24 slid in without the slightest opposition. The urinary difficulties disappeared as the stricture expanded.

Case II. J. B., æt. 36, consulted me concerning a difficulty he experienced regarding urination. His calls to make water were constant, but he never succeeded in passing more than a few drops at a time; and his clothes were continually wet from dribbling. He made water before me, when the usual symptoms of aggravated stricture presented themselves. He had no stream, but sent out his urine in a jerking manner, drop by drop; and at the conclusion of the act, a small quantity ran off when the penis assumed the dependent position. He had been married for nine years, and had had an attack of gonorrhœa about a year before marriage; he was unable to say how long it lasted, but had a vivid recollection of frequent chordee.

Examination with an acorn bougie revealed the presence of a stricture in the bulbo-membranous region. As it was evidently a narrow one, I at once had recourse to comparatively small instruments, both flexible and silver; but, not succeeding with them, I tried filiform bougies, and passed a No. 2 French readily. A French bougie, measuring 1 millimetre at its point, and gradually enlarging to No. 3, was grasped, but refused to enter the bladder. He was told to return in four days, when the instrument before used passed without difficulty, but the next size larger was arrested. I recommended treatment by continuous dilatation for thirty-six hours, which was put in force seven days later. In the interval elapsing between the second visit and the period when continuous dilatation was commenced, widening of the stricture had taken place sufficiently to permit the introduction of a No. 3 French bougie, which was tied in. On visiting him next day he told me, with much delight, that, during the few hours preceding my visit, his stream had been larger than it had been for years before, and pointed with pride to the contents of the *pot de chambre* as an evidence of the success of the treatment. The bougie was removed at the end of thirty hours, and No. 10 French was passed. The future progress of this case was perfectly satisfactory, but need not be detailed here.

Case III. J. N., æt. 22, admitted into the Aberdeen Royal Infirmary in the end of January 1877, suffering from difficulty in passing urine. Four or five years ago he had two attacks of gonorrhœa, one lasting six, the other two, months. Soon after the second attack symptoms of stricture were observed; and on receiving a hurt when practising gymnastics on the horizontal bar in December, 1876, they become much aggravated. On admission his calls to urinate were very frequent, his stream forked and inclined to the left side. On examination a stricture was found in the bulbo-membranous portion of the urethra. A prolonged attempt to penetrate it was made with French flexible and slender silver catheters, but it was fruitless. A whalebone bougie with an angular point, graduated 1 to 5 (F. scale), was then passed down to the face of the stricture, and by gently twisting it from side to side its point soon became engaged in the orifice, but it required some little force to make it traverse the entire length of the contracted portion of the canal, the stricture being evidently a long and tortuous one. The bougie was tied in and left for forty-eight hours, when it was replaced by a No. 5 French catheter, which was allowed to remain for seventeen hours. I did not intend to continue the continuous dilatation for more than forty-eight hours; but on withdrawing the filiform bougie I found that the stricture had undergone but little change, and thought it better to again secure an instrument in the bladder. The second instrument slipped out while the patient was asleep, and instrumentation was not again resorted to for four days, as he complained of pain, and purulent discharge was abundant. After these symptoms had so far subsided dilatation was re-commenced; but still only a comparatively small instrument could be sent through the stricture, so a No. 7 French was tied in for forty-eight hours, and on removing it, a No. 12 French was passed easily. After this the progress was rapid, but does not require notice. I may here advert to the difficulty experienced in tying in very slender instruments, especially whalebone bougies, as the thread is apt to slip on account of the fineness and smoothness of the instrument employed. This difficulty presented itself in the case just mentioned, but was readily solved by Mr. Noble, one of our students, who was present at the time. He suggested the use of a small pearl shirt-button, which answered perfectly, the end of the shaft being passed through one of the holes, and a thread of worsted attached to it. I think the suggestion was as ingenious as it was ready, and should not be lost sight of by those who may wish to tie in whalebone bougies.

Continuous dilatation was employed at first in all the cases now narrated; in two of them on account of the difficulty found in effecting an entrance, and in the remaining one on account of the narrowness of the stricture, and as progress would evidently have been tedious and unsatisfactory. It is not my usual custom to recommend the adoption of the continuous mode throughout, though I frequently have recourse to it as an adjunct in complicated or difficult cases. For, notwithstanding the favourable opinion expressed by many authorities as to the value of this mode of treatment, and though, as Mr. Holmes remarks in his recent work on surgery, "As much progress may often be made in the dilatation of a stricture in ten days by this method as would have been in a month by gradual dilatation;" yet I cannot adopt this practice, nor can I accept the teaching of even so high an authority as Mr. Savory, contained in the following sentences extracted from a paper contributed by him to St. Bartholomew's Reports, vol. ix.:—"The mode of action of this plan of treatment contrasts favourably with that of any other; the stricture is overcome, the abnormal tissue is removed by constant pressure. . . . It acts not by a mechanical force, but by a physiological process. Of all modes of treatment this undoes the mischief in the most natural manner; and here, I submit, is its claim to be considered the best." Unfortunately, even in my own limited experience, it has fallen to my lot to treat cases which had before been subjected to treatment by continuous dilatation, where contraction had taken place to so great a degree as to make me doubt very much whether any absorption of the stricture-tissue had really ever taken place; and I believe that gradual dilatation is, in the great majority of cases, the mode most worthy of adoption; and that Sir Henry Thompson's maxim should never be lost sight of, viz.:—"First and foremost, dilatation—dilatation always—dilatation without exception, whenever it will succeed. It is always to be tried first, because it is the simplest and easiest mode."

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